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SOIL CONSERVATION
SERVICE

DEPARTMENT OF AGRICULTURE

Reedy Creek
SOIL EROSION CONTROL PROJECT
Spencer, W. Va.

SAVING FOR THE FUTURE

All West Virginia land owners are faced with the problem of making a satisfactory living and, at the same time, conserving their land assets in order to derive a satisfactory living in the years to come. Naturally, the first concern is that a satisfactory living is obtained at the present time. The land owner, however, must not neglect the fact that it is necessary for him to conserve both the soil and water if the productivity of his land is to be maintained.

The topsoil is nature's store-house of plant food and it is upon the surface layer which we must depend largely for the growing of satisfactory yields of crops. Roughly speaking, the productive capacity of a given tract of land will vary with the depth of the surface soil. Whenever the sloping fields are plowed and planted in row crops soil erosion takes place with every run-off producing rain, so that the depth of the surface soil is being continually diminished. Soil formation is so slow that the amount added each year to the surface soil is almost negligible. It becomes apparent that unless the present surface soil is conserved productivity will decline. The saying that "sub-soil farming is bankrupt farming" cannot be denied.

Many land owners in the interest of obtaining a living plant an excessive acreage to cultivated crops and thus set the stage for increased losses from soil erosion without a thought to the possible significance of such action.

Under proper land use and farming methods it is possible to maintain productivity of our soils to control soil erosion in such a way as to insure its future productive power. Many methods of erosion control are being demonstrated in the Roedy Creek Soil Erosion Control Project. Longer rotations with adequate provision for leguminous meadows, strip cropping and contour farming are essential practices on cultivable lands. Practically all of the pasture lands are in need of treatment in order to increase their carrying capacity. Adequate fertilization and liming where necessary will largely control erosion under proper grazing management practices. Many of the steeper hillsides should be reforested and the present woodlots protected from fires and grazing in order to stabilize the soil surface, thus preventing erosion, and to establish under-ground reservoirs for conserving moisture. The adoption of these and other practices will make for a profitable agriculture of the future.

The land owners, then, must be concerned not only with present returns, but also in protecting the land capital from which future returns will come. This is a real challenge to the land owners in West Virginia and one which must be solved if agriculture is to prosper in a large part of the hill lands of the state.

J. S. Cutler,
Acting Regional Director

SOIL EROSION IN WEST VIRGINIA

Very little, if any, part of the area of West Virginia has not been subjected to erosion. The reconnaissance erosion survey, conducted by the Soil Erosion Service, under the direction of the United States Department of the Interior, indicates the areas of erosion and the amount of soil loss that has taken place. The only land in the state that is not subject to serious erosion is found in the narrow stream bottoms and even that is, in places, being cut away, more or less, by the action of the streams at flood time. Comparatively small areas now in forest are not eroding seriously, although much of the forested area of the state has been burned over. Burning destroys the layer of leaf litter and exposes the bare soil. Erosion, in such cases, may again become arrested as leaf litter accumulates through a period of years.

The greatest amount of destructive erosion has taken place in the northwestern one-third of the state throughout the length of the Ohio River where it touches West Virginia and extending back from the river towards the east ten to fifty miles. This is one of the areas of most intensive farming. Probably 90 percent of this part of the state has been cleared of timber and much of it cultivated at some time. Many steep slopes have become exhausted of their topsoil and have been allowed to grow up in woods. The extreme southern part of the state in the vicinity of the most intensive coal mining operations, while mostly wooded, has also been subjected to serious erosion due mainly to destructive lumbering methods. Frequently the steep hillsides near to the mines have been entirely cleared of timber and are now being cultivated. Exposed in this manner the loss of soil is tremendous.

A second belt, of more or less uniform erosion conditions, extends across the central part of the state in a northeasterly and southwesterly direction. The greater part of this area is now in timber, mostly second growth, and while the soil has been subjected to serious erosion in the past, due to careless lumbering methods, the erosion is now largely arrested in the woods. An average of 50 percent of the surface soil has been lost from this region.

A third belt extends along the eastern part of the state, including Pocahontas, Greenbrier and Monroe counties. This includes the limestone valleys extending parallel to the West Virginia-Virginia boundary, an area of comparatively rich soils which support a good stand of grass, and, consequently, have not been subjected to very serious erosion. Much the same conditions prevail in the eastern panhandle. An average of about 30 percent of the surface soil has been removed from these regions.

The northern panhandle is a region of comparatively good farming and careful farmers. Continued cultivation of the steep slopes in the northern panhandle and in the best farming regions in the northern part of the state will eventually result in serious loss of soil. From 25 to 75 percent of the topsoil has already been lost. Thorough liming, confining cultivation to the more gentle slopes, combined with strip-cropping, will preserve the soil for many generations. Failure to do so may result in rapid destruction of the soil.

HOW TREES CONTROL EROSION

Most of us are prone to wonder when we hear the statement that trees control erosion. The Department of Agriculture after having made a careful study of this subject had the following to say in the Copeland Report:

"Under many conditions the Forest probably offers the best and cheapest method available for erosion control and stream flow regulation."

In order that we might have a better understanding of how trees control erosion, let us pause and observe them. Each of you as you read this pick out some tree within sight or with which you are familiar and note the following natural characteristics which makes possible erosion control by the use of trees.

1. During the entire summer trees are covered with a beautiful coat of green leaves which serve chiefly to manufacture and supply food for the trees. But they also act as a buffer, checking the fall of millions of rain drops as they descend toward the earth. Naturally, this serves to break the force with which the rain drops hit the earth's surface. This greatly reduces the abrasive action of the water and also slows up the runoff.

2. The trunk and branches of the tree serve to support the leaves and are the parts of the tree from which almost all our wood products are derived. In addition they intercept many, many rain drops during a rain storm and lead them gently to the ground.

3. The roots of the tree are used to anchor it to the ground and to pick up from the soil mineral nutrients and water necessary to the life processes of the tree. They, furthermore, serve by penetrating into the earth, to open up tiny passage ways deep down into the soil and along these small passage ways millions of gallons of water annually find their way deep down into the earth.

4. Everyone has noticed how cool and shady it is in the woods on a hot summer day. You have always thought of this perhaps as a good place to picnic or rest, but these same factors which make it cool and enjoyable prevent the ground from drying out and check the velocity of the wind so that our erosion losses from this source are negligible.

5. There is scarcely an individual but what at some time has paused to admire the millions of beautifully colored leaves that our trees shed each fall. This coat of leaves, if left undisturbed, forms a protective blanket which guards the valuable top soil from the action of wind, water, and ice during the winter months. A cover of dry leaves will absorb many gallons of water during a period of rainfall which prevents this same water from dashing from the hillsides cutting more gullies as it goes. Furthermore, this same cover of leaves gradually decays forming rich humus material which is absolutely essential to our soil if it is to remain fertile and productive.

HOW TREES CONTROL EROSION (Cont.)

6. In addition, Forest tree fruits and litter provide homes and food for thousands of insects and animals which burrow into the ground and thereby increases the percolation of the water into the soil rather than allowing it to run off unhampered.

These are just a few of the many factors by which trees tend to control erosion and regulate stream flow. If each of you take the time to look around you will see that this is true. If you will observe a small stream flowing out of a wooded area and compare it with one flowing out of a fallow or plowed field the contrast will be quite pronounced.

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LIME DELIVERED TO COOPERATORS

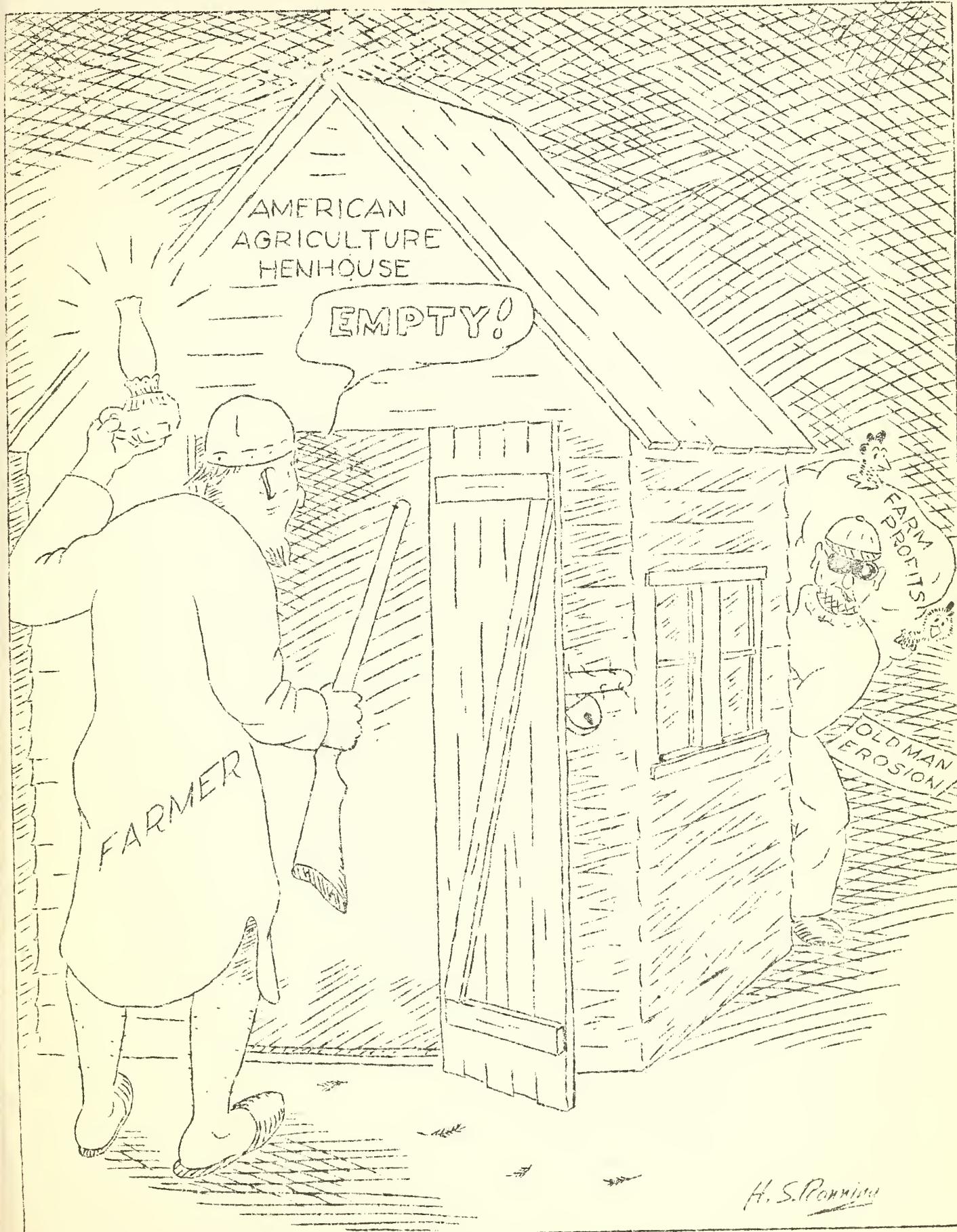
Thousands of dollars will be saved by the Soil Erosion Service this year in the procurement of lime for its cooperators, according to recently compiled statistics. The lime is being secured from a quarry at Limestone Ridge, 25 miles southwest of Elizabeth, which is estimated to contain 100,000 tons.

During the month of March the department distributed 655 tons of lime and 140 tons of commercial fertilizer to the cooperators. The total cost of delivery was \$1000.65, which included \$341.00 for gasoline, oil, truck repairs, and shop labor, and \$664.65 for truck drivers, labor and supervision. The average cost per ton for crushing the limestone was 70¢, and the average cost of delivery \$1.26, making a total of \$1.96 per ton. An average of almost 38 tons of materials were delivered per working day during the period.

In April, 560 $\frac{1}{2}$ tons of lime and 360 tons of commercial fertilizer were distributed with the total cost of delivery amounting to \$1079.86, including \$444.74 for repair, maintenance, etc., and \$635.12 for drivers' wages. The average cost for crushing was 60¢ per ton, and the average ton delivery cost 1.18, totalling 1.78, which shows a marked decrease over March. This variation is due to the cost of breakage, repairing, new machinery, etc., each month. An increase in the average tonnage distributed was also noted, April showing approximately 42 tons per day, due to improved road conditions.

Lime is required on almost every acre of cultivated land in the project area since the natural lime has been removed by cropping and erosion. The "contact man" test the soil for lime requirements while inspecting the farms and determine the amount needed for each field. During the last year 15,000 tons were delivered to cooperators in the Reedy Creek area.

WHO BROKE THE LOCK ON THE HENHOUSE DOOR?



VALUE OF PERMANENT VEGETATION IN PREVENTING EROSION

"Even as man has been responsible for the present status of erosion, so has man the power to reduce soil washing to a minimum." This statement by Dr. L. D. Bauer of the University of Missouri is true regardless of where you attempt to apply it.

One of the better ways for man to reduce soil washing is by establishing permanent vegetation such as good stands of timber, grass, and hay crops of alfalfa, red clover or timothy.

Studies carried on over a period of 11 years by the Soil Department of the University of Missouri reveal that from a 3.65 slope, the following amounts of soil in tons per acre were lost annually from different forms of vegetation: continuous corn, 19.7; rotation of corn, wheat and clover, 2.80; continuous wheat, 10.1; continuous blue grass only, .34; and land plowed 8 inches deep and fallowed, 41.1 tons.

In other words the number of years to erode 7 inches of soil which in West Virginia means practically all the good surface soil, is 50 for continuous corn; 368 for a rotation of corn, wheat and clover; 100 for continuous wheat, 3,045 for continuous blue grass and 24 where the land was plowed 8 inches deep and allowed to lie idle. Even though the soils of West Virginia in general are less erosive than soils of the Middle West, the slopes are probably 10 times as great in West Virginia and this tends to offset the former, and gives a general idea regarding the amount of soil that is lost when different systems of cropping are employed.

The solution to the erosion problem is proper land use and that in the Roedy Creek Project area can be accomplished by planting to trees areas too rough to hold pasture, the treatment with lime and fertilizer of the smoother pasture land, and the production of a good supply of hay such as alfalfa, which can be substituted for a large amount of the grain now grown.

Only when man has done this will soil washing be reduced to the minimum and then profitable farming of tomorrow will be assured.

* * * * *

FLOODS PREVENTABLE

Recently our newspapers have been publishing articles describing the destructive floods which are destroying a vast amount of property and rendering thousands of people homeless in the lower Mississippi valley. Year after year a similar tragedy occurs in that region. Dikes have been built, the stream bottom has been dredged, but the problem has not been solved.

Proper grazing of pastures, protection of forests from fire and grazing and proper farm practices would go far toward preventing this terrible catastrophe. If the watershed draining into this channel was protected by a good vegetative cover there would probably be no destructive floods.

SWEET CLOVER

Have you noticed this spring the thrifty vigorous green plants growing along the highways of West Virginia? If you have you've doubtless asked yourself the question many others are asking, "What is it and why does it grow so well along the sides of the road?"

This plant is a legume, that is, it fixes nitrogen from the air, and is known as Sweet clover. It resembles alfalfa in color, and type of growth and may even exceed alfalfa in height of growth. Two species, the white and the yellow sweet clovers are most common, of which the white is most important. Both are biennials and both are very prolific seed bearers, thus accounting in part for the rapid spread along the roadways.

Sweet clover, however, is more than a roadside weed. Its value is recognized for its deep rooted, drought resistant soil improving qualities. Its dense growth covers the ground, prevents erosion, and the plants seldom freeze out during the winter. Sweet clover is said to be more tolerant of wet soils than alfalfa or red clover. It is also used for hay, is regarded as one of the best plants for honey production, and is grown for seed.

One of Sweet clovers most important uses is as pasture for dairy and beef cattle, hogs and sheep. Seeded in small grain in the spring, the first years growth may be grazed for two months in the fall. Second year Sweet clover can be pastured earlier in the spring than most other pasture crops. The usual grazing period for the second year is from the latter part of April to the middle of August. It has been proven to carry as much or more livestock than any other kind of pasture and is ordinarily looked upon as being able to carry two or more times as many cattle per acre as will bluegrass. Feeding value of Sweet clover is comparable to that of alfalfa.

Sweet clover probably got its start along the roadside, from some seed sown by the State Road Commission in their efforts to hold the soil on steep fills and cuts. Because it grows so rank and establishes itself with such apparent ease along the highway, many farmers wonder why this plant would not be a good one to grow on their farms. The answer, of course, is that it would. There are three things, however, the West Virginia farmers will have to provide before they will have success with Sweet clover. These three essentials are lime, phosphorus and inoculation. If the soil is comparatively rich and does not need lime and if bacteria required by Sweet clover are already present in the soil, the farmer is all set to grow Sweet clover. All of these essentials are apparently found along the highways of West Virginia where Sweet clover is found growing. Recent soil tests in the Spencer area where road banks are covered with luxuriant Sweet clover show that lime is present naturally in the soil.

* * * * *

Elsewhere in this issue will be found an account of the State Agricultural Tour, June 17. Farmers who cannot go on the tour will profit by spending the day with the group on the Reedy Creek Soil Conservation Project. Plan to go and see what your neighbor is doing.

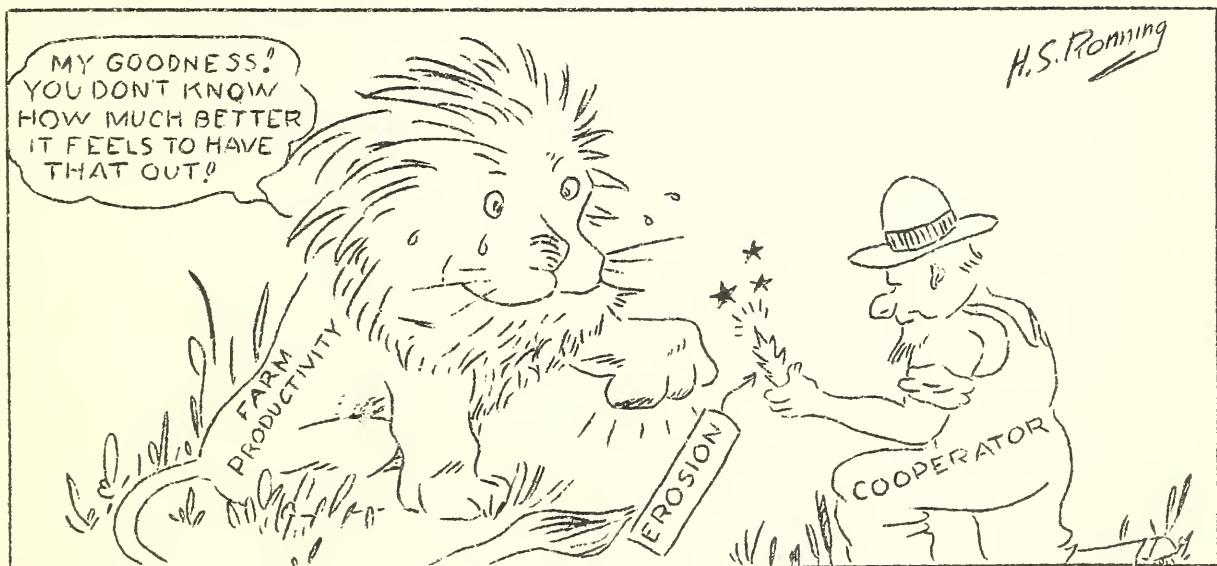
The amount of water that runs off West Virginia fields during a heavy rain is much greater than the average individual would estimate.

In studying this problem in erosion control work it is necessary to know not only the amount and rate of the rain that actually falls but also the quantity that soaks into the ground.

The rate at which rain falls is usually dependent upon the length of time it rains. Heavy rains last for only short periods of time while the longer rains are of lesser intensity. Of course, we occasionally have a very heavy rain fall lasting a relatively long period of time. The amount of the rain that runs off a field depends upon the size and shape of the field, the slope of the land, the rate and duration of the rainfall, the vegetative covering, and the permeability of the soil. During a heavy fifteen minute shower 900 barrels of water could fall on a 5 acre field. If the field were timber land approximately 200 barrels would run off, while 700 barrels would soak into the ground. If the field were cultivated land, 650 barrels would enter the ground. Five acres of pasture land would soak up 520 barrels, leaving 380 barrels to run off.

Thus the amount of water running off cultivated fields is three times greater than for timbered areas and twice greater than for pasture areas. This fact explains why cultivated fields erode much faster than wooded or pasture areas.

ANDROCLES AND THE LION



FEATHERED FRIENDS

Farmers who are cooperating with the Soil Conservation Service in the Reedy Creek Project are receiving a great benefit through the establishment of plantations of soil holding trees and grasses on their eroded hillsides.

The average farmer fails to appreciate the great service done him by his feathered friends of the field and forest. Were it not for the birds this planet would not be habitable for the human race. Every year our fight for life against insects becomes more desperate. Partly because, in our headlong, heedless rush through life, we thoughtlessly hinder and destroy our best helpers.

By indiscriminate removal of our forests, we have removed the natural home sites of the most valuable of our insect eating birds as well as laid the soil open to destructive erosion. By planting and protecting the forests, we again offer inducement to the insectivorous birds to make their nests near us and rear broods that take many harmful insects from crops and meadows to feed.

The Quail is also a valuable asset to the farmer. Given a chance to live unmolested, a covey of Quail will act as a strict control on the Mexican bean beetle.

Crows, in small numbers, can be and often are more beneficial than harmful. But where there are large numbers of crows, they are, as a general rule, very harmful to our more valuable and desirable birds.

Another deadly enemy to bird life is the house cat. Some owners take their cats into the country and turn them loose, in order to get rid of them. These cats naturally turn to hunting to live. The average farmer has many cats to feed as he cares for. They also do a vast amount of damage. Cats are natural killers. Like the weasel, they kill just to satisfy the desire to kill. Naturally the easiest victims are the ground nesting and ground feeding birds. One cat has been known to completely destroy a covey of 19 Quail in three nights.

Two very bothersome and noisy enemies to the desirable birds are the English Sparrow and the Starling. Song or insectivorous birds will not or cannot nest where either of these two species exist in any numbers. Starlings have been seen stealing nestlings from Robin's nests.

The American Game Association of Washington, D. C., furnishes, upon request, a drawing and specifications for a very effective crow trap. Sparrows and Starlings can also be trapped. By controlling the numbers of these injurious birds we encourage and help the birds we want. The only effective control for cats is a 12 gauge shotgun and number 2 or 4 shot. Poison is not recommended for these pests at any time in any place.

EDUCATIONAL TOUR PLANNED IN JUNE FOR W. VA. FARMERS

Plans for an educational tour for West Virginia farmers and other interested citizens, June 17-21, under the supervision of the Agricultural Extension Service, West Virginia University, have been completed, according to officials of the College of Agriculture in charge.

Points of interest in West Virginia and Ohio are included in the itinerary planned for the trip, which will serve both as a vacation in visiting interesting places and people and as an opportunity to learn about some of the most advanced farm practices by seeing them actually in operation and having them explained by well-informed guides.

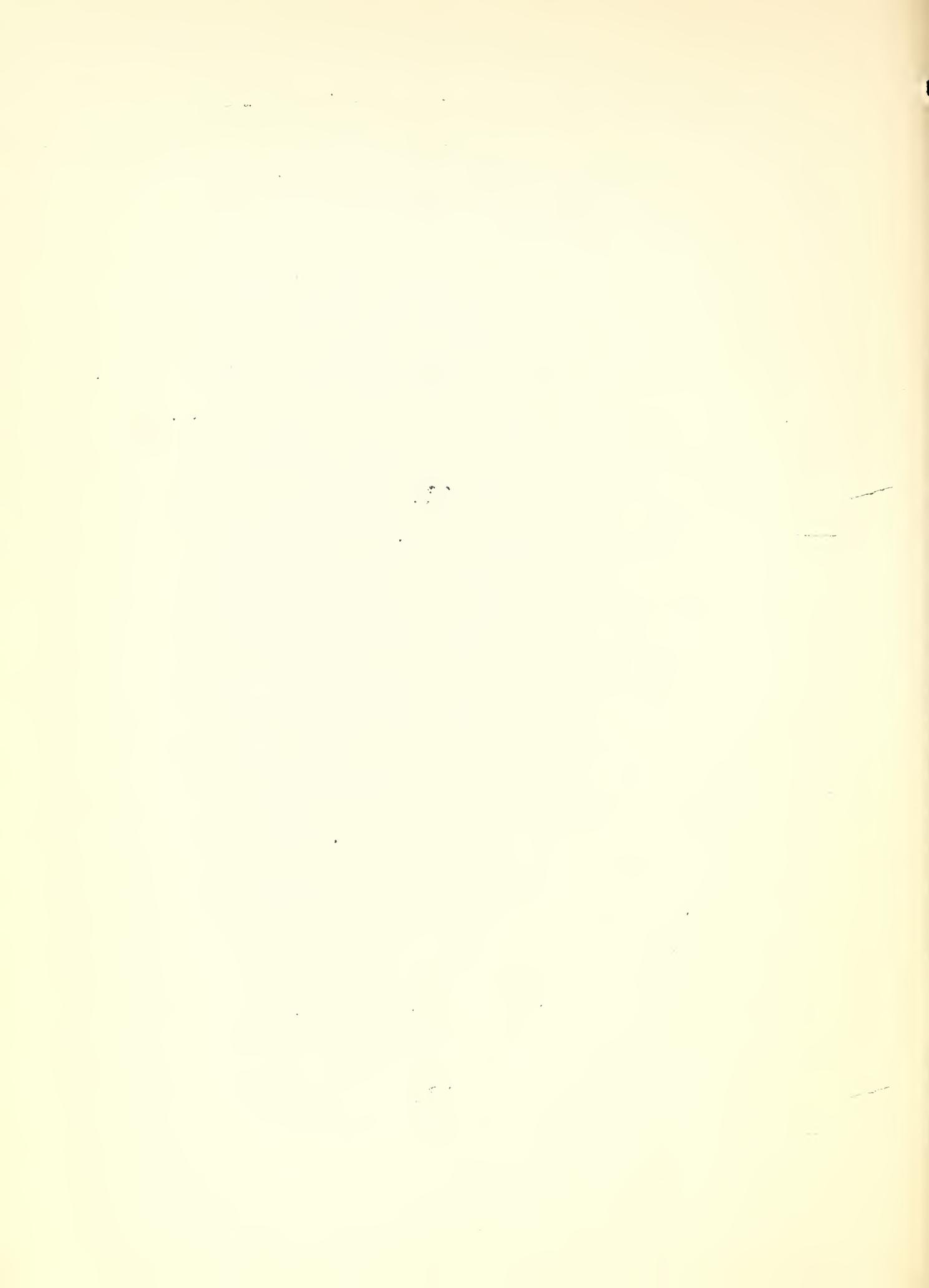
The tour begins at Spencer, Roane county, at 10:00 a.m. on Monday, June 17, where methods used on farms in the Reedy Creek section to control soil erosion by the federal government in its erosion control project located there will be studied, including strip cropping, soil saving dams, pasture improvement, the growing of winter barley and alfalfa, and reforestation. Late that evening the party will arrive in Charleston where it will spend the night.

A visit to the state capitol with the Department of Agriculture as host will start off the second day of the tour, which leads down the Kanawha river valley to Point Pleasant with a stop along the way to see the Federal Subsistence Homestead project at Red House. In the afternoon the experimental work with small fruits and vegetables, crop rotations, fertilizers, lime, and legumes at the Lakin sub-station of the West Virginia Agricultural Experiment Station will be inspected and explained by workers in charge.

On Wednesday, the 19th, the third day of the tour, the Ohio Experiment Station and State Forest Nursery at Marietta will be visited, followed by a tour through the Muskingum river valley where an extensive vegetable growing industry has developed. At Zanesville the Federal Erosion Control Experiment Station where an effort is being made to determine the most practical and efficient methods of controlling soil erosion will be visited as the final stop of the tour on Thursday, June 20.

Special rates for lodging have been arranged for at hotels where the tourists will stop overnight, and every effort is being made to make the tour as educational, economical, enjoyable, and safe as possible. West Virginia and Ohio state police will serve as pilots and accompany the tour to insure safe travelling.

Persons who want to go on the tour should notify the local county agricultural or home demonstration agent as soon as they can and at least several days in advance so that hotel reservations and other accommodations can be arranged.



JOHNNIE HAD A LITTLE LAND

Johnnie had a little land
With hillsides steep you know,
And when he plowed his steep hillsides,
His soil washed down below.

He soon was farming subsoil land,
His topsoil was all gone.
His barns were empty, crops were poor,
His neighbors said, "Poor John."

But Mary said to him one day,
"You're doing all you can,
Yet crops are poorer every year,
Let's try another plan."

"I've read about erosion's toll
And of the ways that we
Can save our soil by proper use,
Let's try it out and see."

He thought it over carefully
And took her sound advice,
If farming could be made to pay
'Twas cheap at any price.

He fertilized and limed the land
On all his gentle slopes,
Especially his level land,
For herein lay his hopes.

On many steep eroded bluffs
He planted bands of trees,
Fenced off, and planted Kudzu vine
On all the rest of these.

He planted cover crops on all
The fields which he had tilled.
He strip cropped with a legume hay
And thus his soil did build.

His barns were filled and running o'er;
His livestock grew and thrrove;
The farm produced abundantly
As to his plan he clove.

John still runs his little farm
And is a happy man,
While Mary is a happy wife
Because they tried this plan.

UNITED STATES
DEPARTMENT OF AGRICULTURE
Soil Conservation Service

Penalty for private use to avoid
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Spencer, West Va.
Official Business

